Notice of Allowability	Application No.	Applicant(s)	
	09/671,120	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	Ayal I. Sharon	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment filed 9/18/2006*.

2. ☒ The allowed claim(s) is/are *1-4,6-14 and 16-21*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Introduction

1. Claims 1-4, 6-14, and 16-21 of U.S. Application 09/671,120, originally filed on 9/28/2000 are currently pending.
2. The application claims priority to Japanese Patent Application 11-279516, filed on 9/30/1999.

Examiner's Statement of Reasons for Allowance

3. Claims 1-4, 6-14, and 16-21 are allowed.
4. The following is an examiner's statement of reasons for allowance for claims 1-4, 6-14, and 16-21.
5. The prior art referred to in this Reasons for Allowance is as follows:
    a. Takahashi et al. U.S. Patent 6,385,643. ("**Takahashi**").
    b. Kleinrock, L. "On the Modeling and Analysis of Computer Networks." Proc. of the IEEE. Aug.1993. pp.1179-1191. ("**Kleinrock**").
    c. Jacobs et al. U.S. Patent 6,385,643. ("**Jacobs**").
    d. Caswell et al. U.S. Patent 6,336,138. ("**Caswell**").
6. In regards to independent Claim 1, Takahashi teaches the following limitations:

> 1. A service distribution device for distributing specified services among a plurality of servers in which there is a difference in processing capacity on a network to balance the server loads, comprising:

a packet capture device capturing packets transmitted through the network to calculate the server processing time and parameters to configure simulation models;

(Takahashi, especially: col.4, line 59 – col.5, line 7)

a server identifier recording information pertaining to the captured packets into a server log for each server;

(Takahashi, especially: col.5, line 55 to col.6, line 7; and "conversion table 4-a")

a service identifier recording information pertaining to the captured packets into a service log for each service;

(Takahashi, especially: col.7, lines 11-25 and 47-64; col.8, lines 45-55)

a server modeling module setting up a simulation model for each server from the server log;

(Takahashi, especially: col.14, lines 14-45)

a service modeling module setting up a simulation model for each service from the service log;

(Takahashi, especially: Fig.2; and col.5, lines 9-15; and col.5, line 37 to col.6, line 48)

a simulator reading in the server model and the service model and running each simulation; and

(Takahashi, especially: see above cited sections)

a server selection module selecting and specifying an optimum server to distribute services to based on a simulator result.

(Takahashi, especially: see above cited sections)

However, Takahashi does not expressly teach the following newly amended limitation, which previously was now-cancelled Claim 5:

wherein said simulator performs a simulation using the server model and the service model and generates a mean value or a median value of a session time for the specific service.

7. In the previous Office Action dated 6/16/2006, dependent claim 5 was indicated as being allowable if rewritten in independent form. Examiner found the following Applicant argument (see p.11 in the response filed 3/14/06) to be persuasive:

Kleinrock teaches only generation of a mean response time of a system. Kleinrock fails to teach or suggest generating a mean value or a median value of a session time, as recited in dependent claim 5.

8. Claim 1 is allowable, and therefore its dependent claims 2, 6-7, and 16-21 are also allowable.

9. Independent claims 12, 13, and 14 have been amended to incorporate this same subject matter of now- cancelled claim 5 (See p.1 of Applicant's remarks filed on 9/18/2006. These claims are allowed for the same reasons as claim 1.

10. Claim 3 was indicated as being allowable in the Office Action of 6/14/2005.

11. In regards to claim 3, while Takahashi teaches the other limitations of the claim (these limitations are identical to those cited above in regards to claim 1), neither Takahashi nor the other cited prior art expressly teaches the following limitations:

> wherein said server modeling module constructs a server model having a queue corresponding to a transmission process using the server log and a server transmission throughput, a server processing time, and a unit processing time as parameters,
>
> wherein the server transmission throughput is calculated from a total size L of an arbitrary, continuous string of the continuously transmitted packets using the formula L / (t-e - t-s) where t-a is an ending packet capture time and t-s is a starting packet capture time, and
>
> wherein the server processing time is calculated using the formula (ts - tc) - (ls + lc) / B, wherein ts and ls are the capture time and size of a server response packet, respectively, tc and lc are the capture time and size of a corresponding client response packet, respectively, and B is a network speed.

12. Claims 8-11 were indicated as being allowable in the Office Action of 11/30/2004.

13. In regards to claim 8, while Takahashi teaches the other limitations of the claim (these limitations are identical to those cited above in regards to claim 1), neither Takahashi nor the other cited prior art expressly teaches the following limitations:

> wherein said server selection module determines a standard value using an output or a single simulation run for each service by said simulator, and determines that a high load

state exists if a difference between, or the ratio of, the standard value and the output of the simulation of a plurality of sessions exceeds a pre-determined threshold,

wherein when said server selection module receives a distribution server query, said server selection module runs a simulation for a service in question for each server and specifies a server for which a result of a ratio for which β multiplied by the standard value is less than or equal to γ, and

wherein β is a ratio of the threshold to the standard value, and γ is a ratio of a number of overloaded cases to a total number of cases.

14. In regards to claim 9, while Takahashi teaches the other limitations of the claim (these limitations are identical to those cited above in regards to claim 1), neither Takahashi nor the other cited prior art expressly teaches the following limitations:

wherein said server selection module determines a standard value using an output of a single simulation run for each service by said simulator, and determines that a high load state exists if a difference between, or the ratio of, the standard value and the output of the simulation of a plurality of sessions exceeds a pre-determined threshold,

wherein when said server selection module receives a distribution server query, said server selection module runs a simulation for a service in question for each server and specifies as a distribution server, a server for which a result of ratio for which β multiplied by the standard value is smallest, and

wherein β is a ratio of the threshold to the standard value.

15. In regards to claim 10, while Takahashi teaches the other limitations of the claim (these limitations are identical to those cited above in regards to claim 1), neither Takahashi nor the other cited prior art expressly teaches the following limitations:

wherein said service modeling module calculates the following parameters from the service log by constructing a service model for each service:
a ratio of the number of sessions for each service to the number of sessions for all services,
a session starting frequency or time interval,
a number of transmissions between the client and sewer per session,
a client response size, packet size, and packet count per transmission,
a sewer response size, packet size, and packet count per transmission, and
a time from the server response until the client response, and

... and calculates the parameters for each session transmission based upon category.

16. In regards to claim 11, while Takahashi teaches the other limitations of the claim (these limitations are identical to those cited above in regards to claim 1), neither Takahashi nor the other cited prior art expressly teaches the following limitations:

> wherein when said server selection module receives a server distribution query, said server selection module sets a server permission to be a starting frequency of the session that will cause a high load state for the service in question for each server, and specifies a server having the biggest difference between the session starting frequency and the permission as a server for distribution, and
>
> wherein the permissions of each of the servers are taken as weighted values of a service distribution, or relative ratios of the permissions are taken as server distribution ratios.

17. Claim 4 was indicated as being allowable in the Office Action of 11/14/2005.

18. In regards to claim 4, while Takahashi teaches the other limitations of the claim (these limitations are identical to those cited above in regards to claim 1), neither Takahashi nor the other cited prior art expressly teaches the following limitations:

> wherein said service modeling module calculates the following parameters from the service log by constructing a service model for each service:
> a ratio of the number of sessions for each service to the number of sessions for all services,
> a session starting frequency or time interval,
> a number of transmissions between the client and server per session,
> a client response size, packet size, and packet count per transmission,
> a server response size, packet size, and packet count per transmission, and
> a time from the server response until the client response;
> a simulator reading in the server model and the service modal and running each simulation; and
> a server selection module selecting and specifying an optimum server to distribute services to based on a simulator result.

19. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Any response to this office action should be faxed to (571) 273-8300, or mailed to:

USPTO
P.O. Box 1450
Alexandria, VA 22313-1450

or hand carried to:

USPTO
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon
Art Unit 2123
November 2, 2006

PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100